

**KEY NEWS** Last update: Sept 02. Since then, the actual 'values' of chemical agent health standards/guidelines listed in the attached "Summary Tables" have not changed -- was HAS changed is the 'status' of some of the air values and their references. In addition, updates of related policies and regulations with significant new procedural changes (monitoring, medical surveillance, personnel decon) have occurred that may be of interest to some (see 'NEW POLICY...', below). The only changes to attached Tables are references and some 'notes' - these are highlighted in yellow. As always - *please note that the Tables themselves should not be used as a source reference* - instead use the cited source documents (I can provide you with requested references). As usual - I note that these *Tables are best viewed/printed in COLOR*.

<< File: CWA-AirTable 4-5-03.doc >> << File: CWA-mediaTable3-19-01.doc >>

**Acute Exposure Guideline Levels (AEGLs):** The official documentation of the final AEGLs for Sulfur Mustard and Nerve Agents (GA, GB, GD, GF, and VX) - has recently been made available by the National Research Council (NRC) as an advance pre-publication copy of the **NRC Volume 3 - Acute Exposure Guidelines Levels for Selected Airborne Chemicals** was released on 14 March 03. The final print edition is to be available in May 03 from the National Academy Press ([www.nap.edu](http://www.nap.edu)), and viewable pdf version should be available from this website in April 03. These guidelines - also developed for toxic industrial chemicals - are for one-time exposures to address catastrophic releases (accidents or WMD event) and are of great interest for a variety of current issues - particularly Homeland Defense and the Army-FEMA joint Chemical Stockpile Emergency Preparedness Program (CSEPP).

**Airborne Exposure Limits (AELs):** AELs for CWA include the **IDLH** values, worker Short-Term Exposure Limits (**STELs**), 8-hr TWA ("TLV-type) Worker Exposure Limits (**WPLs**), and chronic daily lifetime General Population Limits (**GPLs**). Over the past few years, the Army Surgeon General had supported efforts to re-evaluate existing AELs and determine whether changes were needed. The past several Updates and Tables have included the recommended changes & new proposed values (i.e. STELs had not been established prior these recent evaluations). However, these changes/new values had yet to be officially incorporated into regulation or policy. The Army has now incorporated the changes and new values - with associated new procedures (e.g. monitoring, use of STEL) in a revision of the **Dept of Army (DA) Pamphlets (DA 40-8 and DA 40-173)** which officially establish the newest AELs (and document the basis for their derivation). The draft revisions are still undergoing official staffing until 14 April 03). Presumably by later in FY 03, *pending comments*, changes will be finalized.

**NEW/CHANGE POLICY REGULATION:** if interested in copies of any of the documents referred to below - just let me know, for most I have electronic).

- The Army and FEMA finalized a joint policy paper (CSEPP Policy Paper #20) re: **AEGL policy for CSEPP** in Feb 03.

- In addition to changes in AELs, the revised (currently under staffing) DA Pams 40-8 and 40-173 described above also recommend substantial procedural changes to include: a) **new personnel decontamination procedures** -warm water and soap - NOT dilute hypochlorite/bleach as has historically recommended); b) **new/modified medical surveillance procedures and procedures for documenting exposures**; c) **new record keeping, health ed/haz com, respiratory protection prgm procedures** per latest OSHA guidance.

- Guidance on **Chemical Accident or Incident Response and Assistance (CAIRA) Operations (DA Pam 50-6)** - The implementing guidance in this Army pamphlet has recent been updated ( 26 March 2003) with significant additions and changes - it especially provides new/expanded information relative to the application of this guidance to terrorist events and non-stockpile sites. Includes guidance/clarification on various organization roles and responsibilities for Army organizations in relation to non-DoD Federal, State agencies, and Regional Response Teams. Updates guidance on remedial actions, and environmental monitoring; and medical roles/procedures. Deletes guidance/info on IRF/SRF exercises, decon, CAIRA plans.

#### **MORE STUFF:**

##### **Military CWA Air Guidelines:**

Under re-evaluation. Per attached Table 1 - current re- evaluation of different sets of guidelines to be applied for military settings for various applications (Force Health Protection surveillance versus casualty estimation) is ongoing.

##### **Establishment of Test Criteria for Permeation of Chemical Protective Clothing.**

A report developed by Oak Ridge National Laboratories in conjunction with USACHPPM for a specific joint NIOSH/Army project describes percutaneous vapor toxicity criteria for use as testing specifications for commercial suits against selected CW agents.

**Standards/Guidelines for other Media other than Air (water, soil, ...) [see Table 2]**

[Status has not changed for two years](#). However, it is noted that TB Med 577 is undergoing final stages of drafting and should be staffed by 3rd QTR 03. The values listed for CWA standards will not change.

**Additional useful info/tools:** USACHPPM has prepared some information papers 'Fact Sheets' that describe the various air standards and guidelines which are available on request.

**ADDITIONALGENERAL INFO/ACCESS TO DOCUMENTS:** Some of the referenced documents are available on the following website. Others will be added as they are finalized/made available. <http://chppm-www.apgea.army.mil/hrarcp/pages/caw/index.html> As usual, feel free to comment. And please let me know if there are problems with the website or other questions/additional information needs.

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**HIGHLIGHTED values indicate changes from previous version (Sep 11 02) of this Table 1**

( ) Numbers in parentheses are from draft documents

**GREEN** Numbers in Green are currently documented in official Army regulation/policy and are no changes expected

**BLUE** Numbers have been developed/endorsed by non-DoD federal proponents for Army and non-Army use

**RED** Numbers are still officially used/endorsed by Army/other approving entity source **but** revisions are proposed/underway (see below)

**BLACK** Numbers are final technical values but are not yet approved for official implementation by proponent agency

\*STEL is new proposed standard not previously established

\*\* Lewisite values are all based on detection; no true IDLH exists (AR 385-61, Table 2-2, 2-3)

**PINK** – regarding ongoing CDC review of AELs and potential changes to “new” (in black) Army proposed values

**REFERENCES:**

- a) DA Pamphlet 40-173: *Occupational Health Guidelines for the Evaluation and Control of Exposure to Nerve Agents GA, GB, GD, and VX*; Medical Services, 4 Dec 1990
- b) DA Pamphlet 40-8: *Occupational Health Guidelines for the Evaluation and Control of Exposure to Mustard Agents H, HD, and HT*; Medical Services, August 1991
- c) AR 385-61: *The Army Chemical Agent Safety Program*; Safety; 28 February 1997
- d) USACHPPM Technical Report: *Evaluation of Airborne Exposure Limits for Sulfur Mustard (HD): Occupational and General Population Exposure Criteria*, Technical Report 47-EM-3767-00, November, 2000
- e) Mioduszewski et al.; *Evaluation of Airborne Exposure Limits for G-Agents: Occupational and General Population Exposure Criteria*, ERDEC-TR-489; April 1998. (and February, 2000 Errata Summary)
- f) Reutter et al.; *Evaluation of Airborne Exposure Limits for VX: Occupational and General Population Exposure Criteria*; ECBC-TR-074; February 2000.
- g) The Centers for Disease Control (CDC) of the Department of Health and Human Services (DHHS) 1988. *Recommendations for Protecting Human Health and Safety Against Potential Adverse Effects of Long-Term Exposure to Low-Doses of Agents GA, GB, VX, Mustard Agents (H, HT, HD) and Lewisite (L)*, Federal Register, Vol. 53 No 50, page 8504, Tuesday, March 15, 1988.
- h) **Draft REV Jan 03 DA Pmt 40-173: *Occupational Health Guidelines for the Evaluation and Control of Exposure to Nerve Agents GA, GB, GD, and VX*; Medical Services,**
- i) **Draft REV Jan 03 DA Pam 40-8: *Occupational Health Guidelines for the Evaluation and Control of Exposure to Mustard Agents H, HD, and HT*; Medical Services,**
- k) March 14 2002, signed by Mr. Raymond J. Fatz, Deputy Assistant Secretary of the Army, (Environment, Safety and Occupational Health) OASA(I&E), addressed to Dr. Paul Joe, Centers for Disease Control (CDC); subject comments to Federal Register request for comments, (Jan 8 2002; 67 FR: 894-901).
- l) National Research Council (NRC) Volume 3, *Acute Exposure Guidelines for Selected Airborne Chemicals*, National Academy Press, Pre-Publication Advance Public copy 14 March, 2003, [www.nap.edu](http://www.nap.edu)
- m) USACHPPM Technical Guide (TG) 230, *Chemical Exposure Guidelines for Deployed Military Personnel*, Jan 02/Update April 03; **currently being reviewed by NRC, (report expected 2004)**
- n) Office of the Secretary of Defense –Chemical and Biological Defense (OASD-CBD) 2001. Johnson-Winegar, A., Deputy for Chemical/Biological Defense, Assistant to the Secretary of Defense, 3050 Defense Pentagon, Washington, D.C., Memo “Interim Certification of Chemical and Biological Data” for General Distribution from DOD Nuclear and Chemical and Biological Defense Programs, 27 Dec 2001).
- o) Grotte, JH and LI Yang, 2001. *Report of the Workshop on Chemical Agent Toxicity for Acute Effects*. Institute for Defense Analyses, 11-12 May, 1998. IDA Document D-2176, Institute for Defense Analyses (IDA), 1801 N. Beauregard St., Alexandria, VA (June 2001).

**Table 2. Chemical Agent Multi Media/Toxicity Standards Status Table: Existing and Proposed criteria as of 3/19/01 POC: V. Hauschild, USACHPPM, 410-436-5213**

Media	Standard Name	Population	Exposure Scenario	H/HD/HT (Mustard)	GA (Tabun)	GB (Sarin)	GD/GF	VX	Lewisite	NOTES/Status
WATER	FDWS (Field Drinking Water Standards) ug/L	soldier	safe for for up to 7 days:	200 <sup>a</sup>	20 <sup>a</sup>	20 <sup>a</sup>	20 <sup>a</sup>	20 <sup>a</sup>	200 <sup>a</sup>	1986 version is being superceded; new values shown have been endorsed by DoD (see memo ref); Currently revised TBMed577 is a DRAFT dated May 99; final publication date TBD; *Nerve agent standards based on most toxic since field detection can't differentiate-specific standards include tabun-140/46 sarin- 28/9.3; soman -12/4; VX - 15/5.
			Normal/humid climate: 5 L/day	(140) <sup>b</sup>	(12* <sup>b</sup> )	(12* <sup>b</sup> )	(12* <sup>b</sup> )	(12* <sup>b</sup> )	(80) <sup>b</sup>	
			Dry climate: 15 L/day	(47 <sup>b</sup> )	(4* <sup>b</sup> )	(4* <sup>b</sup> )	(4* <sup>b</sup> )	(4* <sup>b</sup> )	(27 <sup>b</sup> )	
SOIL (mg/kg) (ppm)	HBESL-Residential (Health-Based Environmental Screening Level)	adults and children	daily exposure, lifetime	0.01 <sup>c,d</sup>	2.8 <sup>c,d</sup>	1.3 <sup>c,d</sup>	0.22 <sup>c,d</sup>	0.042 <sup>c,d</sup>	0.3 <sup>c,d</sup>	-EPA Region IX PRG soil risk assessment methods used;  -Uses GPLs and chronic toxicity values cited below ( RfD, CSF, IUR)  -Endorsed by DA (ESOH); May 99
	HBESL-Industrial (Health-Based Environmental Screening Level)	adults	frequent exposures 250 days/ yr. for 30 years	0.3 <sup>c,d</sup>	68 <sup>c,d</sup>	32 <sup>c,d</sup>	5.2 <sup>c,d</sup>	1.1 <sup>c,d</sup>	3.7 <sup>c,d</sup>	
WASTE	HWCL <sub>sol</sub> <sup>e</sup> or LDR <sub>sol</sub> <sup>f</sup> (Solid hazardous waste) (mg/kg)	civilian/ DoD worker	possible occasional exposure at HW treatment facility	6.7 <sup>e,f</sup>	680 <sup>e,f</sup>	320 <sup>e,f</sup>	52 <sup>e,f</sup>	10 <sup>e,f</sup>	37 <sup>e,f</sup>	- EPA Reg IX PRG risk assessment methods used;  - Uses GPLs and chronic toxicity values ( RfD, CSF, IUR)  -proposed in a Department of Army proposed rule presented to the State of Utah and Oct 2000 CHPPM memo to PMCD  -to date no official Utah State response received; -Waste values not represented in any final report policy or guidance document.
	HWCL <sub>Liq</sub> <sup>e</sup> or LDR <sub>Liq</sub> <sup>f</sup> (liquid hazardous waste) (mg/L)	civilian/ DoD worker	possible occasional exposure at HW treatment facility	0.7 <sup>e,f</sup>	20 <sup>e,f</sup>	8.3 <sup>e,f</sup>	0.3 <sup>e,f</sup>	0.08 <sup>e,f</sup>	3.3 <sup>e,f</sup>	
	NHWCL <sup>e</sup> or Solid Waste Exemption Levels <sup>f</sup> (mg/kg or ppm)	civilian/ DoD worker	at a non-HW land disposal facility, possible occasional exposures	0.3 <sup>e,f</sup>	68 <sup>e,f</sup>	32 <sup>e,f</sup>	5.2 <sup>e,f</sup>	1.1 <sup>e,f</sup>	3.7 <sup>e,f</sup>	
Chronic Toxicity Criteria	RfD (Reference Dose) (mg/kg/day)	civilian population	chronic (lifetime) ingested dose that will produce adverse health effects	0.000007 <sup>g,h,i,j</sup>	0.00004 <sup>g,h,i,j</sup>	0.00002 <sup>g,h,i,j</sup>	0.000004 <sup>g,h,i,j</sup>	0.0000006 <sup>g,h,i,j</sup>	0.0001 <sup>g,h,i,j</sup>	- NRC/COT (1999) gave general endorsement of values ; outstanding issues (e.g. re: Lewisite ) were addressed in Final DA OTSG endorsement letter of final RfDs (dated 16 Feb 2000)
	CSF (Cancer Slope Factor) (mg/kg/day) <sup>-1</sup>	civilian population	represents the potency of the agent by ingestion to cause increase cancer risk.	7.7 <sup>g,c</sup>	Not determined to be a carcinogen					-The NRC/1999 endorsed a less conservative HD Slope Factor of (1.6 mg/kg/day) <sup>-1</sup> ; DA OTSG (Feb 00) has currently endorsed use of the 7.7
	IUR (Inhalation Unit Risk) (ug/m <sup>3</sup> ) <sup>-1</sup>	civilian population	represents the potency of the agent by inhalation to cause increased cancer risk	4.1 x 10 <sup>-3k</sup>						Table 20 HD HCD, Nov 00

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**REFERENCES:**

<sup>a</sup> TB Med 577, *Sanitary Control and Surveillance of Field Water Supplies*, March 1986.

<sup>b</sup> TB Med 577, *Sanitary Control and Surveillance of Field Water Supplies*, final DRAFT May 1999 (final/official publication date TBD) and Memorandum, DASG-HS-PE, 16 Apr 1997, Subject: Tri-Service Field Water Standards for Nerve Agents.

<sup>c</sup> *Health-Based Environmental Screening Levels for Chemical Warfare Agents*, USACHPPM/ORNL Technical Report, March 99.

<sup>d</sup> Memorandum, Headquarters Department of the Army, Office of the Assistant Secretary for Installations, Logistics, and Environment, SUBJ: Derivation of Health-Based Environmental Screening Levels (HBESLs) for Chemical Warfare Agents, May 28 1999.

<sup>e</sup> Memorandum, Department of the Army – Center for Health Promotion and Preventive Medicine; MCHB-TS-EES; SUBJ: Response to State of Oregon Comments on the Utah Chemical Agent Rule (UCAR), 23 October 2000; NOTE: This response includes USACHPPM Information Paper “**Management Criteria for Chemical Warfare Agent (CWA)-Contaminated Waste and Media**”, dated 10 October 00 as well as USACHPPM Technical Paper: “**Chemical Warfare Agent Health-Based Waste Control Limits**”, dated September 2000.

<sup>f</sup> U.S. Army –Proposed Utah Chemical Agent Rule (UCAR), May 1999 (Volume 1, Section XI. Development of Health-Based Waste Management Concentration Levels.”

<sup>g</sup> Memorandum, MCHB-CG-PPM, Chronic Toxicological Criteria for Chemical Warfare Compounds, 16 February 2000.

<sup>h</sup> Review of the U.S. Army’s Health Risk Assessments for Oral Exposure to Six Chemical-Warfare Agents, *National Research Council, National Academy Press, WashDC, 1999*

<sup>i</sup> Opresko et. al, *Chemical Warfare Agents: Estimating Oral Reference Doses, Review of Environmental Contamination and Toxicology*, Vol 156, pp 1-183, 1998

<sup>j</sup> DA 1996, *Interim Chronic Toxicological Criteria for Chemical Warfare Compounds*, Memorandum MCHB-DC-C, 4 June 1996, Office of the Surgeon General.

<sup>k</sup> CHPPM Technical Report: *Evaluation of Airborne Exposure Limits for Sulfur Mustard (HD): Occupational and General Population Exposure Criteria*, Technical Report 47-EM-3767-00, November, 2000

**ADDITIONAL USEFUL INFORMATION REGARDING CWA BREAKDOWN PRODUCTS:**

Munro et al.; *The Sources, Fate, and Toxicity of Chemical Warfare Agent Degradation Products*, Environmental Health Perspectives, Volume 107, Number 12, December 1999 pp933-974.